The introduction of hundreds of new FM stations under Docket 80-90 has increased the diversity of voices available to listeners throughout the country. In order to evaluate the amount of that diversity in terrestrial radio, we have analyzed the number of stations listened to by the U.S. public. Specifically, we have analyzed, on a county basis, the number of different stations mentioned in audience surveys conducted by The Arbitron Company. The number of stations people listen to in any one county will be larger than the number of stations licensed to that county since radio signals do not stop at geographic boundaries but instead travel great distances.

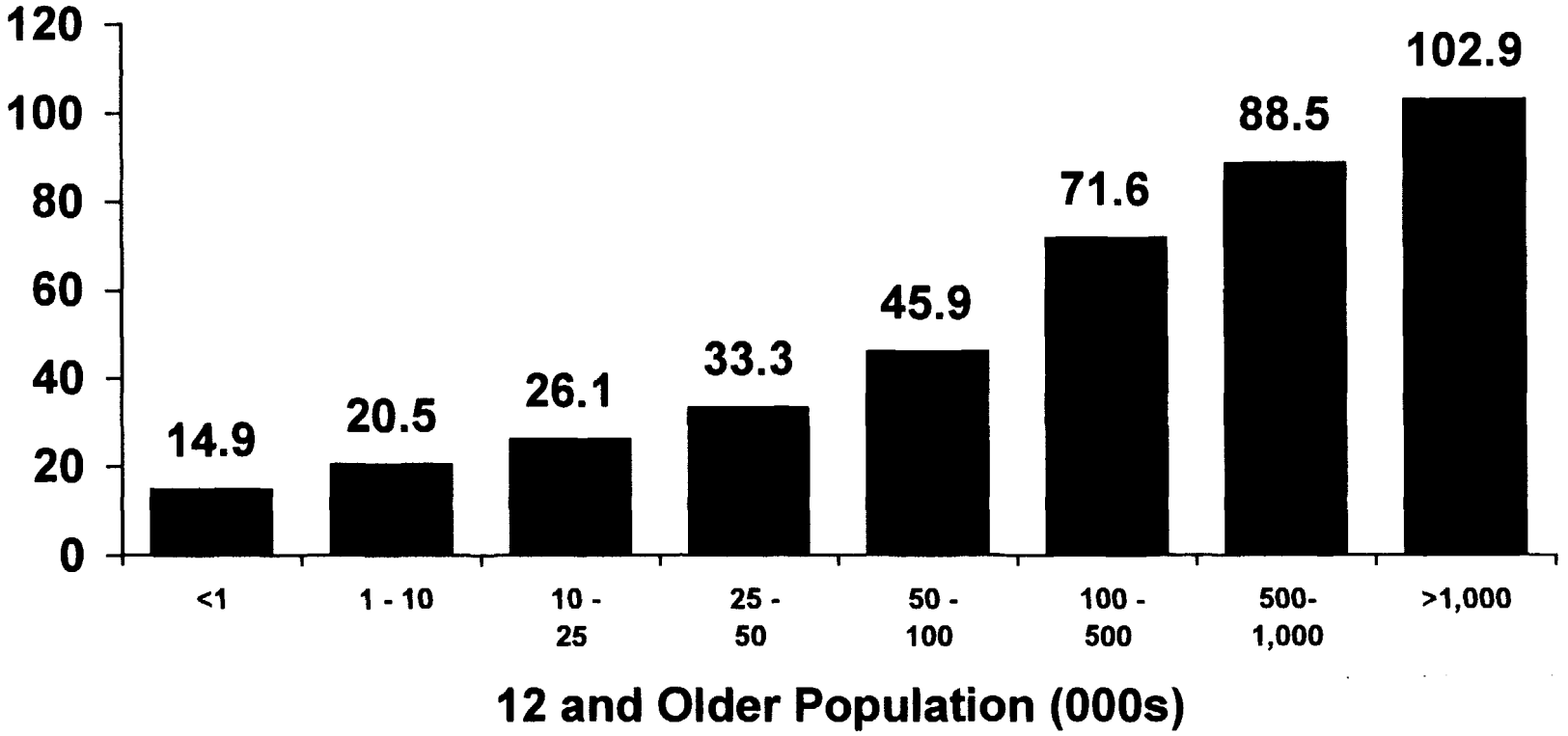
It is clear that there is a large number of radio stations available to the U.S. listening public, even in markets with comparatively small populations. The average number of different stations that are listed by diary keepers in the average county is 34.7 stations. This means, that in the average county a total of 34.7 different stations are listed in diaries. This does not mean that the average person listened to this number of stations. Even in the smallest counties, those with fewer than 1,000 in population (age 12 and older), the average number of different stations listed is 14.9.

The data examined are the number of different radio stations mentioned in audience survey diaries in every county in the U.S. for 1994. A station is attributed to a county so long as one diary included its call letters. This county-by-county information is produced by The Arbitron Company once a year. The population size of each county is the total of those aged 12 and older, the same population Arbitron surveys in its radio listening studies.

Figure 1 shows the average number of stations mentioned for different county size population groups. Even in the smallest of counties, those with less than 1,000 in population, an average of nearly 15 (14.9) stations were mentioned. As you mover to larger counties, more stations are mentioned. In the largest counties, those with over 1 million in population, over 100 different radio stations are available on average.

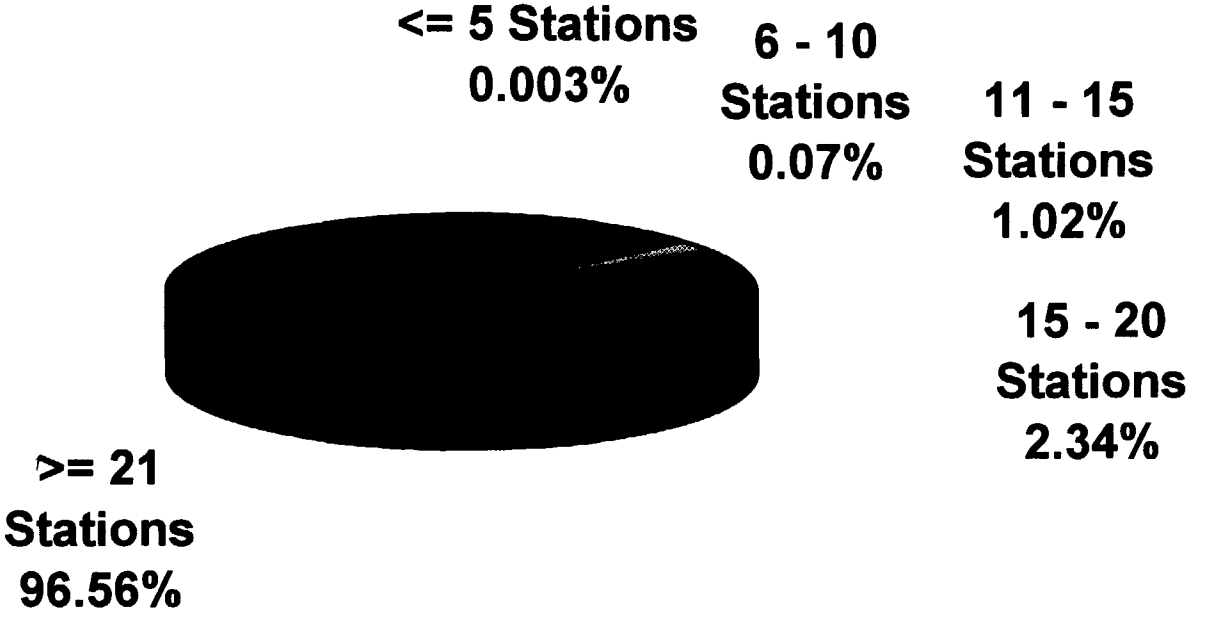
Another way of examining these same data is to determine the size of the U.S. population served by different number of radio stations. Figure 2 shows the distribution of the 12 and older population served by different numbers of radio stations. Only a small fraction, .003% of the total U.S. population 12 and older lives in counties that are served by less than 6 stations. Over 99% of the U.S. population lives in counties served by at least 11 stations, with 97% in counties served by at least 21 stations.

Figure 1
Average Number of Stations Mentioned by County Population Size



Data Compiled from Count-By-County Information supplied by The Arbitron Company.

Figure 2
Distribution of 12 and Older Population Served by Number of Radio Stations



Data Compiled from Count-By-County Information supplied by The Arbitron Company.

AN ANALYSIS OF THE NUMBER OF FORMATS OFFERED IN ARBITRON MARKETS

Research and Planning Department

National Association of Broadcasters

September 15, 1995

In order to evaluate the present level of diversity of radio stations already available, we examined data on radio station formats for stations located in the 261 Arbitron metro area markets. A firm that specializes in the collection of radio station information, M Street Corporation, assigns one of a possible 33 format classifications for every radio station in the country.[1] Stations are assigned multiple formats if they program different types of programming during the day.

Attached is a graph showing the average number of formats offered in different Arbitron Market groupings. The top 10 markets, with many more radio stations available, provide an average 26 different formats. As you move to smaller markets fewer formats are offered. Yet, even in the smallest markets, markets size 101 and larger, nearly 15 (14.9) different formats are offered.

These averages, as well as the attached listing by market of the number of formats offered, probably understates the present diversity. While different stations in a particular markets may be offering the programming of a similar genre, it will undoubtedly have its own twist, trying to differentiate itself in its local market. Moreover, these data are classified by the origin of the station within particular Arbitron metro markets. Clearly signals from stations in other markets will be heard, thus increasing the diversity of voices in all markets.

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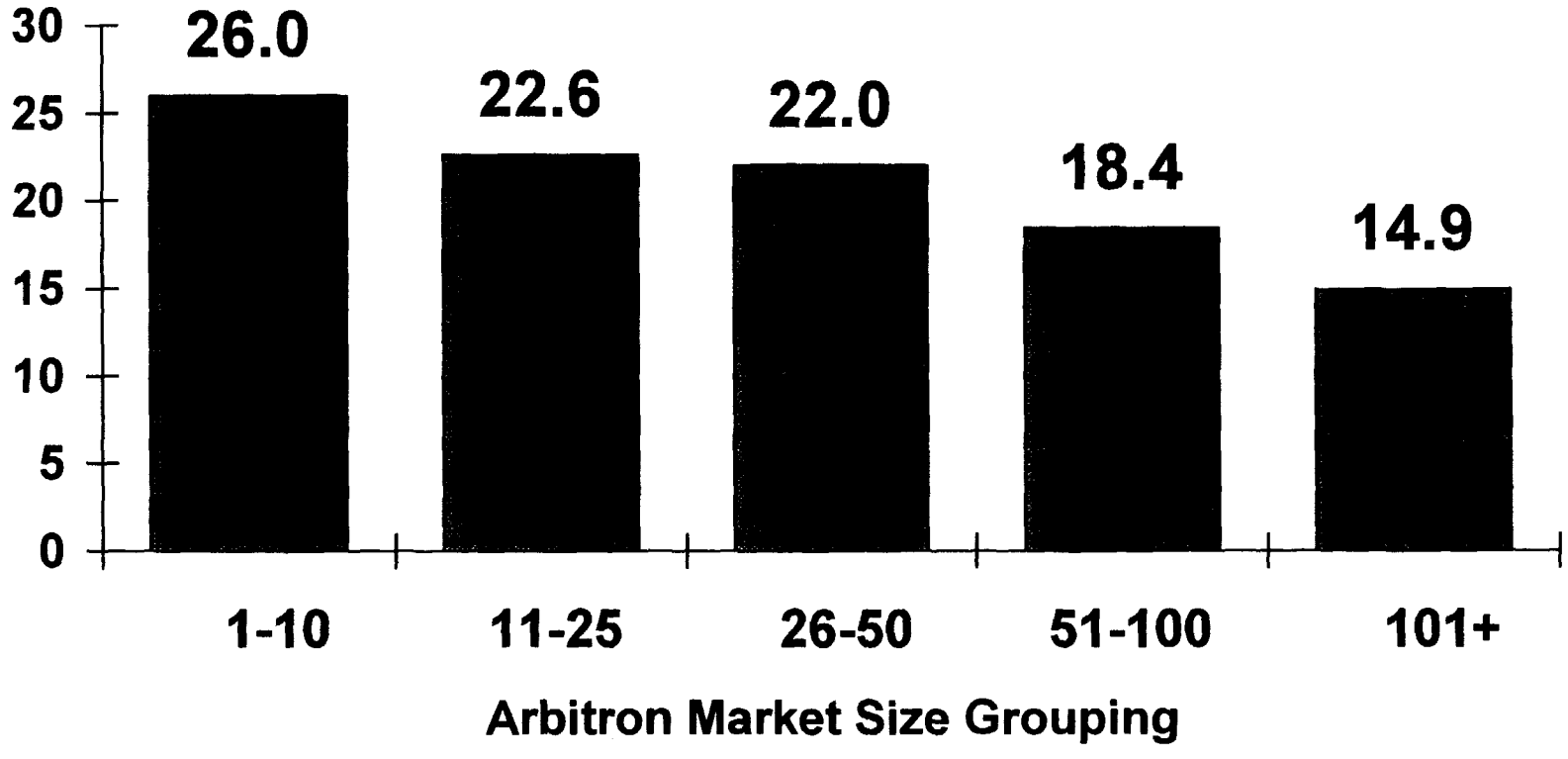
[1] See *The M Street Radio Directory*, 1995 Edition, M Street Corporation, New York, NY, 1994, pp. 15 -17.

Average Number of Formats Offered in Arbitron Markets



Source: Data compiled from station information supplied by M Street Radio Corp., New York, NY, August 1995.

Number of Formats Offered in Arbitron Markets

Market Name	Market Rank	Market Pop. (12 and Older)	% of U.S. Pop. (12 and Older)	# of Formats
Oklahoma City	51	823,000	0.39%	19
Raleigh-Durham	52	804,800	0.38%	22
Birmingham	53	785,400	0.37%	20
Austin	54	785,100	0.37%	20
Las Vegas	55	776,400	0.37%	24
Richmond	56	766,100	0.36%	22
Albany-Schenectady-Troy	57	744,800	0.35%	21
Honolulu	58	731,500	0.35%	20
Greenville-Spartanburg (SC)	59	689,600	0.33%	25
Tulsa	60	641,700	0.30%	21
Wilkes Barre-Scranton	61	636,600	0.30%	21
Tucson	62	608,100	0.29%	20
Allentown-Bethlehem	63	604,700	0.29%	14
Fresno	64	586,800	0.28%	22
Grand Rapids	65	584,400	0.28%	23
McAllen-Brownsville-Harlingen	66	565,200	0.27%	15
Akron	67	565,100	0.27%	17
Syracuse	68	555,200	0.26%	18
Albuquerque	69	534,000	0.25%	23
Knoxville	70	531,200	0.25%	24
Omaha-Council Bluffs	71	522,800	0.25%	19
El Paso	72	521,700	0.25%	17
Harrisburg-Lebanon-Carlisle	73	516,900	0.25%	20
Toledo	74	511,300	0.24%	21
Springfield, MA	75	508,200	0.24%	18
Wilmington (DE)	76	506,700	0.24%	13
Monterey-Salinas-Santa Cruz	77	500,400	0.24%	18
Sarasota-Bradenton	78	461,100	0.22%	12
Greenville-New Bern-Jacksonville (NC)	79	459,500	0.22%	17
Little Rock	80	447,200	0.21%	22
Baton Rouge	81	446,600	0.21%	17
Charleston (SC)	82	439,000	0.21%	17
New Bedford-Fall River, MA	83	429,200	0.20%	7
Stockton	84	415,200	0.20%	14
Mobile	85	414,500	0.20%	17
Youngstown-Warren	86	413,900	0.20%	19
Wichita	87	412,900	0.20%	17
Bakersfield	88	412,500	0.20%	19
Des Moines	89	410,600	0.20%	20
Columbia (SC)	90	398,600	0.19%	17
Spokane	91	391,800	0.19%	22
New Haven	92	387,600	0.18%	10
Johnson City-Kingsport-Bristol	93	387,400	0.18%	18
Ft. Wayne	94	385,700	0.18%	19
Dayton Beach	95	380,200	0.18%	12
Chattanooga	96	377,300	0.18%	21
Melbourne-Titusville-Cocoa	97	377,100	0.18%	15
Lafayette (LA)	98	374,600	0.18%	19
Roanoke-Lynchburg	99	374,100	0.18%	21
York	100	370,000	0.18%	13

Source: Data compiled from station information supplied by M Street Radio Corp, New York, NY, August 1995.

Number of Formats Offered in Arbitron Markets

Market Name	Market Rank	Market Pop. (12 and Older)	% of U.S. Pop. (12 and Older)	# of Formats
Worcester	101	369,700	0.18%	17
Colorado Springs	102	369,500	0.18%	20
Morristown, NJ	103	368,300	0.17%	8
Lexington-Fayette	104	366,200	0.17%	19
Lancaster	105	366,100	0.17%	10
Lakeland-Winter Haven	106	366,000	0.17%	12
Lansing-East Lansing	107	363,900	0.17%	21
Huntsville	108	361,100	0.17%	19
Bridgeport	109	360,900	0.17%	9
Visalia-Tulare-Hanford, CA	110	357,700	0.17%	12
Oxnard-Ventura	111	357,200	0.17%	19
Augusta (GA)	112	357,100	0.17%	18
Gainesville-Ocala	113	351,800	0.17%	18
Flint	114	348,900	0.17%	14
Santa Rosa	115	348,800	0.17%	12
Jackson	116	336,900	0.16%	20
Portsmouth-Dover-Rochester	117	336,600	0.16%	14
Canton	118	335,000	0.16%	13
Saginaw-Bay City-Midland	119	329,000	0.16%	19
Modesto	120	328,900	0.16%	20
Madison	121	326,100	0.15%	19
Ft. Myers, FL	122	325,600	0.15%	14
Ft. Pierce-Stuart-Vero Beach	123	323,600	0.15%	19
Fayetteville, NC	124	318,300	0.15%	17
Pensacola	125	305,800	0.15%	22
Beaumont-Port Arthur, TX	126	304,100	0.14%	19
Shreveport	127	302,300	0.14%	15
Reading, PA	128	295,500	0.14%	10
Corpus Christi	129	293,200	0.14%	16
Quad Cities (Davenport-Rock Island-Moline	130	290,500	0.14%	18
Peoria	131	284,100	0.13%	17
Atlantic City-Cape May	132	282,400	0.13%	17
Trenton, NJ	133	282,200	0.13%	15
Stamford-Norwalk, CT	134	280,100	0.13%	11
Boise	135	277,700	0.13%	16
Reno	136	271,100	0.13%	21
Appleton-Oshkosh	137	271,000	0.13%	14
Biloxi-Gulfport-Pascagoula, MS	138	268,800	0.13%	15
Huntington-Ashland	139	267,700	0.13%	16
Newburgh-Middletown, NY (Mid-Hudson Va	140	265,800	0.13%	12
Utica-Rome	141	263,500	0.13%	20
Montgomery	142	256,200	0.12%	17
Tyler-Longview, TX	143	255,500	0.12%	11
Eugene-Springfield (OR)	144	252,200	0.12%	18
Ann Arbor	145	249,400	0.12%	13
[illegible]ckford	146	244,100	0.12%	15
[illegible]con	147	242,700	0.12%	20
Springfield, MO	148	238,800	0.11%	18
Evansville	149	237,200	0.11%	17
Palm Springs, CA	150	236,600	0.11%	17

Source: Data compiled from station information supplied by M Street Radio Corp, New York, NY, August 1995.

Number of Formats Offered in Arbitron Markets

Market Name	Market Rank	Market Pop. (12 and Older)	% of U.S. Pop. (12 and Older)	# of Formats
New York	1	14,124,200	6.71%	27
Los Angeles	2	9,656,900	4.59%	28
Chicago	3	6,880,700	3.27%	26
San Francisco	4	5,330,700	2.53%	23
Philadelphia	5	4,115,300	1.95%	27
Detroit	6	3,660,200	1.74%	25
Dallas-Ft. Worth	7	3,542,600	1.68%	25
Washington (DC)	8	3,493,700	1.66%	26
Houston-Galveston	9	3,294,400	1.56%	27
Boston	10	3,206,100	1.52%	26
Miami-Ft. Lauderdale-Hollywood	11	2,843,000	1.35%	22
Atlanta	12	2,770,000	1.32%	26
Seattle-Tacoma	13	2,696,500	1.28%	26
Nassau-Suffolk (Long Island, NY)	14	2,269,900	1.08%	17
San Diego	15	2,212,500	1.05%	15
Minneapolis-St. Paul	16	2,146,200	1.02%	22
St. Louis	17	2,098,500	1.00%	25
Baltimore	18	2,049,500	0.97%	18
Pittsburgh	19	2,031,400	0.96%	24
Phoenix	20	1,932,800	0.92%	26
Tampa-St. Petersburg-Clearwater	21	1,864,200	0.89%	25
Cleveland	22	1,766,100	0.84%	24
Denver-Boulder	23	1,705,800	0.81%	25
Portland (OR)	24	1,563,300	0.74%	22
Cincinnati	25	1,548,800	0.74%	22
Milwaukee-Racine	26	1,352,900	0.64%	24
Kansas City	27	1,351,400	0.64%	24
Riverside-San Bernardino	28	1,347,800	0.64%	21
Sacramento	29	1,340,800	0.64%	22
San Jose	30	1,302,400	0.62%	19
Providence-Warwick-Pawtucket	31	1,278,800	0.61%	19
Norfolk-Virginia Beach-Newport News	32	1,221,500	0.58%	23
Columbus (OH)	33	1,215,700	0.58%	20
San Antonio	34	1,166,500	0.55%	23
Salt Lake City-Ogden-Provo	35	1,138,000	0.54%	24
Indianapolis	36	1,092,400	0.52%	23
Charlotte-Gastonia-Rock Hill	37	1,060,500	0.50%	23
New Orleans	38	1,030,200	0.49%	25
Orlando	39	1,006,000	0.48%	23
Buffalo-Niagara Falls	40	995,600	0.47%	21
Hartford-New Britain-Middletown	41	968,500	0.46%	19
Greensboro-Winston Salem-High Point	42	940,600	0.45%	25
Memphis	43	931,200	0.44%	25
Rochester (NY)	44	897,500	0.43%	22
Nashville	45	886,200	0.42%	24
[illegible]onmouth-Ocean	46	873,800	0.42%	12
[illegible]ayton	47	842,700	0.40%	24
Louisville	48	839,600	0.40%	22
West Palm Beach-Boca Raton	49	829,100	0.39%	20
Jacksonville	50	823,600	0.39%	22

Source: Data compiled from station information supplied by M Street Radio Corp, New York, NY, August 1995.

Number of Formats Offered in Arbitron Markets

Market Name	Market Rank	Market Pop. (12 and Older)	% of U.S. Pop. (12 and Older)	# of Formats
Erie	151	232,400	0.11%	17
Poughkeepsie, NY	152	224,700	0.11%	15
Savannah	153	224,600	0.11%	17
Salisbury-Ocean City	154	223,500	0.11%	21
Binghamton	155	220,200	0.10%	20
Charleston (WV)	156	216,600	0.10%	18
Wausau-Stevens Point (Central WI), WI	157	212,800	0.10%	19
Hagerstown-Chambersburg-Waynesboro, M	158	212,600	0.10%	15
South Bend	159	211,500	0.10%	18
Columbus, GA	160	211,400	0.10%	16
New London, CT	161	208,000	0.10%	11
Portland, ME	162	205,900	0.10%	20
Killeen-Temple, TX	163	205,800	0.10%	13
Anchorage	164	201,600	0.10%	18
Johnstown	165	201,200	0.10%	13
Fayetteville-Springdale, AR	166	199,200	0.09%	16
San Luis Obispo, CA	167	193,600	0.09%	18
Ft. Smith, AR	168	191,600	0.09%	11
Tallahassee	169	191,200	0.09%	17
Kalamazoo	170	188,800	0.09%	16
Waterbury, CT	171	187,900	0.09%	6
Lubbock	172	186,900	0.09%	38
Lincoln	172	186,900	0.09%	38
Odessa-Midland, TX	174	183,900	0.09%	15
Dothan, AL	175	180,500	0.09%	16
Myrtle Beach, SC	176	178,800	0.08%	17
Morgantown-Clarksburg-Fairmont, WV	177	178,200	0.08%	16
Tupelo, MS	178	177,600	0.08%	12
Topeka	179	177,500	0.08%	11
Asheville	180	172,800	0.08%	14
Terre Haute	181	170,700	0.08%	16
Santa Barbara, CA	182	169,400	0.08%	13
Green Bay	183	168,200	0.08%	15
Cape Cod, MA	184	167,000	0.08%	16
Chico, CA	185	166,500	0.08%	17
Merced, CA	186	163,600	0.08%	8
Yakima, WA	187	162,700	0.08%	14
Wilmington (NC)	188	162,500	0.08%	11
Springfield, IL	189	161,900	0.08%	12
Elmira-Corning, NY	190	161,000	0.08%	42
Waco, TX	190	161,000	0.08%	42
Manchester	192	158,800	0.08%	14
Amarillo,TX	193	158,700	0.08%	14
Danbury, CT	194	158,500	0.08%	8
Naples-Marco Island, FL	195	154,500	0.07%	11
'exandria, LA	196	151,700	0.07%	12
..orthwest Michigan (Traverse City-Petoske	197	151,500	0.07%	17
Florence, SC	198	151,100	0.07%	10
Champaign, IL	199	149,600	0.07%	15
Cedar Rapids	200	145,900	0.07%	16

Number of Formats Offered in Arbitron Markets

Market Name	Market Rank	Market Pop. (12 and Older)	% of U.S. Pop. (12 and Older)	# of Formats
Lake Charles, LA	201	138,200	0.07%	11
Marion-Carbondale (Southern Illinois), IL	202	136,600	0.06%	17
Reading, CA	203	136,500	0.06%	15
Frederick, MD	204	135,800	0.06%	7
Laurel-Hattiesburg, MS	205	135,700	0.06%	14
Medford-Ashland, OR	206	135,400	0.06%	16
Duluth-Superior	207	134,100	0.06%	17
Tuscaloosa, AL	208	134,000	0.06%	16
Fargo-Moorhead	209	133,700	0.06%	15
Wheeling	210	132,800	0.06%	18
Tri-Cities (Richland-Kennewick-Pasco), WA	211	131,100	0.06%	12
Sioux Falls	212	130,200	0.06%	57
Ft. Walton Beach, FL	212	130,200	0.06%	57
Dubuque, IA	212	130,200	0.06%	57
St. Cloud, MN	215	130,100	0.06%	16
Lima, OH	216	127,700	0.06%	13
Parkersburg-Marietta, WV-OH	217	126,300	0.06%	16
Waterloo-Cedar Falls	218	122,000	0.06%	20
Abilene	219	120,300	0.06%	16
Burlington, VT	220	119,600	0.06%	14
Laredo, TX	221	117,900	0.06%	12
Charlottesville, VA	222	117,400	0.06%	16
Eau Claire,WI	223	117,300	0.06%	12
Monroe, LA	224	116,900	0.06%	18
Lafayette, IN	225	116,200	0.06%	15
Joplin, MO	226	115,500	0.05%	13
Bloomington	227	114,900	0.05%	11
Battle Creek, MI	228	114,600	0.05%	7
Panama City, FL	229	114,200	0.05%	18
State College, PA	230	112,300	0.05%	10
Altoona	231	110,300	0.05%	12
Bryan-College Station, TX	232	109,000	0.05%	15
Pueblo	233	106,300	0.05%	11
Santa Fe, NM	234	106,000	0.05%	10
Wichita Falls, TX	235	105,100	0.05%	9
Williamsport, PA	236	101,800	0.05%	15
Columbia, MO	237	100,700	0.05%	14
Texarkana, TX-AR	238	100,400	0.05%	16
Billings, MT	239	98,500	0.05%	14
Augusta-Waterville, ME	240	98,100	0.05%	15
Lawton, OK	241	97,000	0.05%	10
Watertown, NY	242	95,900	0.05%	12
Sioux City, IA	243	95,800	0.05%	15
Rochester, MN	244	91,600	0.04%	16
Albany, GA	245	91,200	0.04%	16
Rapid City, SC	246	91,000	0.04%	14
ınd Junction, CO	247	86,000	0.04%	15
Grand Forks, ND-MN	248	85,300	0.04%	14
LaCrosse, WI	249	83,800	0.04%	14
Ithaca, NY	250	83,500	0.04%	14

Source: Data compiled from station information supplied by M Street Radio Corp, New York, NY, August 1995.

Number of Formats Offered in Arbitron Markets

Market Name	Market Rank	Market Pop. (12 and Older)	% of U.S. Pop. (12 and Older)	# of Formats
San Angelo, TX	251	82,700	0.04%	10
Harrisonburg, VA	252	79,400	0.04%	12
Owensboro, KY	253	73,400	0.03%	10
Danville, IL	254	72,500	0.03%	10
Bismarck,ND	255	70,200	0.03%	13
Bangor, ME	256	66,800	0.03%	16
Great Falls, MT	257	66,100	0.03%	12
Beckley, WV	258	64,200	0.03%	12
Cheyenne, WY	259	62,700	0.03%	11
Meridian, MS	260	62,500	0.03%	11
Casper,WY	261	49,700	0.02%	7

Source: Data compiled from station information supplied by M Street Radio Corp, New York, NY, August 1995.

Estimating the Audience Diversion from Broadcast Radio by the Introduction of Satellite Digital Audio Radio Service (DARS)

Research and Planning Department
National Association of Broadcasters
Washington, DC USA

July 1995

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Estimating the Audience Diversion from Broadcast Radio by the Introduction of Satellite Digital Audio Radio Service (DARS)

July 1995

Introduction

The Federal Communications Commission (FCC) expressed interest in the extent to which the introduction of Satellite Digital Audio Service (DARS) may decrease terrestrial radio listenership.[1] Estimating the market impact of a new product or service introduction is a common objective in the field of innovation and market research. Nonetheless, it remains an elusive undertaking. The objective of this study is to provide an estimate of how much listening to terrestrial radio stations may be diverted away to DARS.

There are several customary ways to estimate the potential impact of new product launches. Generally, the literature regarding the adoption and diffusion of innovations is fairly rich.[2] Perhaps the most fruitful approach to forecasting product diffusion is to use several methods to arrive at a forecast and then reconcile and recombine these estimates to derive a most likely case (after weighing the pros and cons of the various methods by which forecasts are produced).[3]

Some of the more common methods for estimating product diffusion are *analogical diffusion models*[4], *Delphi technique*[5] and *consumer adoption models*[6].

Analogical Diffusion

As the Commission anticipates in its *Notice*, one useful way to estimate how a new product diffusion will occur is to examine analogous products which might be substitute goods. The "analogy" can be framed in several fashions. It could be on the basis of similarities in price, technology, consumptive behavior, product attributes or marketing.

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[1] Establishment of Rules and Policies for the Digital Audio Radio Satellite Service in the 2310-2360 MHz Frequency Band, *Notice of Proposed Rulemaking*, June 15, 1995, at paras. 10-20.
[2] See e.g., Mahajan, Vijay, Eitan Muller and Frank M. Bass, "New Product Diffusion Models in Marketing," *Journal of Marketing*, January 1990, pp. 1-26.
[3] Thomas, Robert, J., *New Product Development*, New York: John Wiley and Sons, Inc., 1993, pp. 196-198.
[4] *Id.*, at p. 190.
[5] Martino, Joseph P., *Technological Forecasting for Decision Making*, New York: North-Holland, 1983, chapter 2.
[6] Urban, Glen L. and John R. Hauser, *Design and Marketing of New Products*, Englewood Cliffs, NJ: Prentice-Hall, Inc., p. 281.

Satellite Digital Audio Services

There are several digital audio service providers using cable and direct broadcast satellite (DBS) distribution platforms. For example, the Commission specifically refers to Digital Music Express (DMX) and Music Choice. DMX and Music Choice offer digital audio services to subscribers of cable or DBS systems. Music Choice, consisting of 30 channels of CD-quality digital music is distributed free to subscribers of the Hughes DBS service, DirecTV.

United Video, Inc. of Tulsa, OK is planning to start-up a new subsidiary company called DirectCom Networks, Inc. "dedicated to bringing digital radio programming and data services directly to the home consumer." The carrier service will transmitted from Hughes' Galaxy IV Ku-band satellite and will permit consumers to use small 18-inch antennas for reception (same size as DBS/DSS dishes). The offering is planned as a "subscription-based" service rather than advertiser-support. The consumer hardware package will cost $300 - $350; it uses proprietary FM Cubed technology, includes an addressable receiver, is engineered to receive digital audio and data feeds, and is designed to last 8 - 10 years.

Taylor Satellite Talk (TST) (a division of Taylor Communications, Inc. Tulsa, OK, Edward Taylor, Chairman) is a new DTH talk radio service to be distributed by United Video's DirectCom Networks. The programming service is set to launch in mid-1995 with 4 dedicated channels providing consumers with 24-hour access to "some of the best talk shows radio has to offer from around the country, with no interruptions for sports or local news." Six additional talk radio channels are planned for the future all targeted to niche audiences of 50,000 - 200,000 homes nationwide. TST will market the audio programming network on a subscription basis. The first channel will be billed at $6.00/month and each additional channel billed at $3.00/month.

Hughes Communications' DBS service, DirecTV, currently provides 30 channels of CD-quality digital music FREE to subscribers of its basic DBS service. DirecTV's audio programming services are supplied by Music Choice, a national subscription service of cable audio programmer, Digital Cable Radio (DCR). In addition to music services, DirecTV also offers audio services from Bloomberg Direct, a division of Bloomberg Business News. The long-form video/audio news services are available 24-hour a day. Slated for introduction to DBS subscribers in 1995 is a direct audio feed of WBBR-AM 1130, Bloomberg's all-news radio station in New York City.

USSB's DBS service is not carrying any separate audio channels. Eventually it may consider offering separate music services or some other types of digital audio channels but it has no plans for introducing any DBS audio services at present.

Estimates of current (May 1995) DBS subscriber levels are varied. According to Paul Kagan Associates, as reported in *Washington Post,* May 16, 1995, "nearly 1 million people subscribe to DBS services and the figure is expected to double by the

end of the year." However, Stan Hubbard in a recent live videoconference (May 17, 1995) stated that 1 million DSS units had been shipped, with some 500,000+ subscribers taking DBS services.

In the medium-power Ku-band satellite direct-to-home (DTH) market, Primestar – backed by a consortium of six leading cable MSOs – currently offers audio and video services to 200,000+ subscribers across the country. Primestar is projecting its DTH services will be in 500,000 homes by year-end 1995. Primestar's overall programming capacity is expected to increase to 150 video channels with the launch of a new Ku-band satellite in 1996. Presently, Primestar is offering a 6 to 12-channel analog "Superaudio" music service provided by Jones Intercable. Primestar is planning to add a 10-channel digital music service to be supplied by DMX in 1995. DMX is a subsidiary of International Cablecasting Technologies (ICT) which launched DMX as a satellite cable radio service in 1991. Primestar anticipates offering additional DMX channels when Primestar moves to a new high-power Ku-band satellite with expanded digital compression capabilities in 1996.. The initial 10-channel DMX music service will then become part of a basic subscriber package and the new additional audio channels from DMX will become premium offerings, according to Primestar officials.

Cable Digital Audio Services

According to the National Cable Television Association[7], the leading music and audio services delivered via cable include Cable Radio Network (10 million subscribers), Digital Music Express (350,000 subscribers), Music Choice (9 million subscribers) and SuperAudio Cable Radio Service (6 million subscribers). Of these, only DMX is offered exclusively as a premium service.

In addition to investigating how analogous products have fared in terms of subscribership, a key question here is how the availability of digital audio services has affected consumption of terrestrial radio services. While not much is publicly available in terms of how consumers use basic and premium cable audio services, the National Association of Broadcasters funded one academic study to investigate this phenomenon.[8] As this study notes, digital cable radio's, "programming advantages include no commercials or talk, more choices within music categories and a wide variety of music types than found in most media markets." One of the major findings is that two-thirds (65%) of the Richmond, Virginia cable audio subscribers report listening to terrestrial in the home either "a great deal" or at least "somewhat less."[9]

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[7] *Cable Television Developments*, Washington, DC: National Cable Television Association, Spring 1995, pp. 92-96.

[8] Donohue, Thomas R., "The Impact of Cable Radio on In-Home Radio and Music Listening," Virginia Commonwealth University, November 1993.

[9] *Id.*, p. 7.

The increased acceptance of digital quality audio services appears very promising. According to Marquest Research in a November 1994 study, interest in a 30 channel offering of commercial-free stereo stations with CD quality sound was interesting to 46% of the sample. In a study of proposed new services, this CD-quality audio service ranked behind only HDTV, pay-per-view television and movies-on-demand.[10]

Consumer Potential for Satellite DARS--A National Survey

While the cases of DBS and cable delivered audio services may be instructive by analogy to the proposed new Satellite DARS, this study estimates more directly how consumers may respond. Several questions added to a national omnibus survey conducted by the Opinion Research Corporation in June 1995 provide empirical measures of consumer interest in and hypothetical use of this proposed service.[11]

In this national survey of adults, 18 years and older, several questions related to radio and the proposed DARS service were included. According to Opinion Research Corporation, sampling error associated with the 1,000 person sample is $\pm$1%.

Radio Listening in the Typical Week

***Question**: How about in a typical week? About how many hours of radio do you listen to in the typical week? Again, be sure to include all your listening wherever it occurs, at home, in the car, at work, from the time you wake up, all day and all night up to the time you go to sleep.*

Overall, 93% of the sample reported at least some listening to radio in the typical week. This tracks closely with Arbitron data. The average respondent reports listening to 21.0 hours of radio in the typical week. Women (21.2 hours) listen slightly more than men (20.8 hours). The heaviest listeners are those in the 18-24 (24.5 hours) and Black (25.5 hours) demographics. The lightest listeners are those in the 55-64 demographic cell (15.9 hours).

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[10] Glanger, Rod, "Consumer Survey Elicits Some Surprising Findings," *Multichannel News*, December 5, 1994, p. 82.

[11] "Radio Listening/New Radio Service," Opinion Research Corporation, Princeton, NJ, June 15,1995.

Consumer Interest in DARS

	% Interested/Very Interested		
Demographics	**No Ads**	**$5/Month**	**With Ads**
Total	48	28	50
Sex			
Male	52	35	54
Female	44	21	46
Age			
18-24	77	48	73
25-34	60	39	61
35-44	56	31	62
45-54	35	17	40
55-64	30	12	32
65+	20	12	22
Region			
Northeast	49	22	49
North Central	46	26	50
South	54	33	53
West	40	27	46
Metro			
Metro	50	27	51
Non-metro	43	30	47
Race			
White	44	25	47
Black	69	46	59
Hispanic	51	33	50
HH Income			
LT $15K	54	27	53
$15-LT$25K	40	23	46
$25K-LT$35K	56	37	57
$35K-LT$50K	51	30	50
$50K or More	49	29	52
Dual Income HH	44	25	47
HH Size			
1	38	21	39
2	39	22	42
3 or More	58	34	60
Children			
None	41	23	42
Total	59	35	62
Under 12	58	35	62
12-17	61	38	61
Education			
HS Inc	51	27	43
HS Grad	45	28	47
College Inc	55	31	56

Overview

Several scenarios were described to assess consumer interest in DARS. This ranged from a service described as "commercial-free" but with no mention of price, to a subscription service and finally a no-fee service supported by commercials. Initial interest levels were high but dropped rapidly when subscription fees were introduced. However, when describing a scenario of no fees, but with commercials, the interest rebounded to levels actually higher than the first scenario (commercial free, no price mentioned) described!

Commercial-Free DARS

Question: *Now, I'd like to ask you about a new kind of radio service. Several companies may soon offer a new radio service which broadcasts compact disk-quality audio from satellites to listeners at home, in the car and at work. This new satellite radio service would consist of at least 30 different kinds of channels featuring a variety of music and non-music formats and no commercials. How interested would you be in a service that would deliver 30 or more CD quality, commercial free radio channels?*

When phrased this way, 48% of the respondents indicated they were "interested" or "very interested" in DARS. The service described was typical of what DARS proponents plan to offer in terms of channels and no commercials (at least for three of the four services).

Summary of Results

- Men (52%) are slightly more interested than women (44%)
- Interest decreases with age. Those 18-24 (77%) are nearly four times more likely to be interested than those 65+ (20%).
- Those in the South (54%) and Northeast (49%) are most interested. Respondents in the West (40%) were least interested.
- Metro (50%) and Non-Metro (43%) areas differed slightly in their interest levels.
- Blacks (69%) expressed strong interest compared to Whites (44%) or Hispanics (51%).
- In terms of Household Income, those with $15,000 to $24,999 income levels had the lowest level of interest (40%). Generally, the higher the income, the greater the interest, although the lowest income respondents, those with household incomes of less than $15,000 per year expressed strong interest (54%).
- The more people in the household, the stronger the interest. Among households with 3 or more people, 58% were interested or very interested

compared to only 38% of one person households and 39% of two person households.

- Those with children (59%) had more interest than those without (41%). There was no real difference in interest between having children under 12 (58%) versus 12-17 years old (61%).
- Those with some high school (51%) or some college (55%) education had greater interest than high school (45%) or college (45%) graduates.

Subscription DARS

Question: *How interested would you be if there was a monthly fee charged . . . say $5 to receive this service?*

By adding the constraint of having to pay a small monthly fee to receive DARS, the overall interest level dropped from 48% to 28% of the respondents. At least one proponent suggested this was a likely price point for monthly service.

Summary of Results

- Interest among men dropped from 52% to 35% when adding the monthly fee. For women, the drop was even more dramatic, from 44% to 21%
- While interest dropped in all age groups when adding the fee, the drops were less dramatic among younger respondents. Those 18-24 dropped from 77% expressed interest to 48% interest. The 25-34 year olds dropped from 60% to 39% interest levels. The other groups were split more evenly between those still interested and those losing interest once a fee was associated with the service.
- Interest levels among the various regions ranged from a fifth to a third of the respondents maintaining their interest in a subscription-based DARS. Those in the Northeast (49% vs. 22%) seemed particularly fickle when adding in a price.
- Metro area respondents dropped from 50% to 27% interested, compared to the more price insensitive Non-Metro area respondents (43% vs. 30% interest).
- All racial groups lost interest when adding a price to the service. Whites went from 44% to 25%; Blacks from 69% to 46% and Hispanics from 51% to 33%.
- Again, all Household Income groups lost interest. Those initially more interested tend to keep their interest higher, particularly those in the $25K to $35K income stratum.
- Larger households lost interest at a greater rate (58% vs. 34%) than either one person (38% versus 21%) or two person (39% vs. 22%) households.

- About half of those without children lost their initial interest (41% vs. 23%), the others were slightly more stable.
- While losing interest, high school graduates (45% vs. 28%) held their ground more so than the other groups.

Commercially-Supported DARS

Question: *How interested would you be if this service were offered WITH commercials but with no monthly fee?*

Summary of Results

Having faced the prospect of paying for a popular service, when the scenario changed to a no fee service but one that had commercials, the interest levels rebounded quickly. Overall, the interest in a commercially supported, no fee service was actually higher (50% vs. 48%) than the commercial-free service initially described.

Discussion

Based on these results, it is clear that there is a significant interest in satellite DARS being offered, particularly a no fee, commercially-supported service. However, even with a $5 monthly fee, over a quarter of the sample would be interested or very interested in the service. Of course, the commercially supported service would have far greater reach (50% overall) and thus its impact on terrestrial radio broadcasting would be much more significant. Pretty much across the board, all demographic groups rebounded to the initial levels of interest, or stronger. The only notable exceptions to this broad trend were among Blacks (69% vs. 59%) and those with some high school (51% versus 43%).

Commercial radio broadcasting places different values on various listener demographics. It is therefore instructive to reflect upon the relative interest levels found in the different demographic groups. As it turns out the audience segments most attractive to advertisers and therefore most valuable to commercial radio tend to be more interested in DARS. This includes younger (18-34), larger households (3+ persons), the middle class ($25K+) and those with children.

Audience Diversion from Terrestrial Radio to DARS

Demographics	% Less Radio Hrs.
Total	11.63
Sex	
Male	16.72
Female	6.87
Age	
18-24	13.12
25-34	18.74
35-44	11.53
45-54	6.95
55-64	6.06
65+	4.36
Region	
Northeast	9.47
North Central	10.26
South	13.49
West	13.21
Metro	
Metro	12.61
Non-metro	9.30
Race	
White	12.14
Black	6.22
Hispanic	11.02
HH Income	
LT $15K	8.77
$15-LT$25K	10.11
$25K-LT$35K	10.68
$35K-LT$50K	19.51
$50K or More	13.84
Dual Income HH	11.08
HH Size	
1	10.66
2	8.99
3 or More	13.81
Children	
None	9.20
Any	15.21
Under 12	15.11
12-17	16.37
Education	
HS Inc	3.89
HS Grad	12.58
College Inc	8.91
College Grad	18.18

How Will Radio Audiences Be Impacted by DARS?

Several questions were included in the Opinion Research Corporation survey to build estimates of DARS use and the resulting impact on terrestrial radio. Overall, the average respondent would listen to 18.6 hours per week of DARS. While some of this time would come from activities devoted to radio listening, it could also come from other activities. However, 20% of the sample said they would listen to less radio if they had a CD-quality satellite radio service. The key question is *how much less radio* would they listen to as a result of using DARS.

Percentage Fewer Radio Listening Hours Per Week With DARS

Respondents were asked to provide estimates of how much radio they listen to in the *typical week*. For those indicating they would listen to less radio with DARS available to them, a further question was posed—how much less radio would they listen to in the average week? These results are shown in the accompanying table.

Overall, with DARS, radio listening on an hours-per-week basis, would decline 11.6%. This audience diversion from terrestrial radio to DARS varies quite a bit by demographic group. This 11.6% is an *overall* figure including all respondents, not just those who indicated they would listen less to radio with DARS. The loss of radio listening among DARS users is *even higher.*

Summary of Results

- Diversion of hours spent with radio to time spent with DARS is much greater among Men (16.7% less radio listening) than Women (6.9%).
- Younger demos, specifically 18-24 (13.1%) and 25-34 (18.7%) would divert more of their time from radio to DARS than older demos.
- The South (13.5%) and West (13.2%) regions show more diversion than do the Northeast (9.5%) or North Central (10.3%) regions.
- Diversion is slightly higher among Metro (12.6%) than Non-Metro (9.3%) respondents.
- Blacks are most loyal to radio (only 6.2% diversion), while both Whites (12.1%) and Hispanics (11%) divert twice as much as their time from radio to DARS.
- The higher the household income, the more time is diverted away from radio to DARS.
- Households with 3 or more people (13.8%) divert more of their radio time to DARS then do those with 1 (10.7%) or 2 (9.0) people.
- Households with children (15.2%) and particularly those with children over 12 (16.7%) divert more time to DARS than those without children (9.2%) or with children under 12 years old (15.1%).
- More educated listeners divert more hours to week to DARS, particularly college graduates (18.2%) and high school graduates (12.6%).

Discussion

Not only are significant numbers of terrestrial radio's key demographic groups interested in DARS, they would apparently divert large amounts of time now spent listening to radio over to DARS listening. This could have a large impact on the terrestrial radio industry. One rule of thumb is that a 1% decrease in audience is associated with a similar decrease in revenues. Thus, on the basis of these estimates, terrestrial radio could stand to lose not only 11.6% of its audience listening hours, but a similar proportion of its revenue base.

The loss of radio listening hours per week is highest among younger, (18-24 loses 18.7% of its radio hours to DARS); higher income ($35K-$50K loses 19.5%) and best educated (18.2% loss among college graduates) listeners. These are key demographics in terms of broadcast radio's attractiveness to advertisers. It is likely that losses in these categories will lead to disproportional revenue losses (i.e., greater than the 11.6% suggested earlier). Not all demographic groups are equally attractive to advertisers.